Case Study

Cummings Research Park: A Critical Mass of High Technology Industries

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Overview Cummings Research Park: A Critical Mass of High Technology Industries

In 1962, Cummings Research Park, located west of downtown Huntsville, Alabama, was formed as a 150-acre joint development of the University of Alabama in Huntsville Foundation and Milton K. Cummings, then-president of Brown Engineering Company (now known as Teledyne Brown Engineering). Today, it houses the University of Alabama in Huntsville, a high-tech incubator known as BizTech, and the Alabama Supercomputer Center, as well as major R&D operations for ADTRAN, Lockheed Martin, and Boeing, to name a few.

As it became evident that Cummings Research Park provided a comparative location advantage to large and small high tech enterprises alike, the City of Huntsville and the Chamber of Commerce of Huntsville/Madison County realized the greater economic development benefits the park could provide for the Huntsville area. They formed a partnership to develop, manage, and market the park.

Due to their efforts, as well as the regional R&D infrastructure, Cummings Research Park has emerged as a leading center for technology development, entrepreneurial innovation, and intellectual capital. The park houses R&D operations for 212 high technology companies that perform research in 33 different fields and employ approximately 22,000 workers.

Conditions Leading to the Practice

The events that led to the formation of Cummings Research Park began during the 1940s. In 1943, the U.S. Army established in Huntsville the Redstone Arsenal, a chemical weapons and ordinance facility, to support the war effort. In 1948, the U.S. Department of Defense transformed the facility into a center for rocket research and development.

In 1950, the U.S. Secretary of the Army transferred Dr. Wernher von Braun, known for research in astronautics, rocketry, and space exploration, and a team of German scientists and engineers to the Redstone Arsenal. Also in 1950, the University of Alabama began offering academic programs in Huntsville, although it did not establish a permanent campus. In 1960, the National Aeronautics and Space Administration (NASA) created the Marshall Space Flight Center in Huntsville. These events enabled Huntsville to support a niche market for defense and space engineering services.

In 1962, Milton K. Cummings, then-president of space and defense contractor Brown Engineering Company (now known as Teledyne Brown Engineering), was interested in developing a major R&D facility in Huntsville. Under his leadership, Brown Engineering Company entered into a joint venture with the University of Alabama in Huntsville Foundation to create Cummings Research Park. Brown Engineering Company purchased the first 150 acres of the park. In 1963, Lockheed Martin Missiles & Space established its R&D operations there.

During the 1960s and 1970s, the University of Alabama in Huntsville Foundation and private partners continued to expand the park's boundaries. Shortly after Cummings Research Park's inception, Dr. von Braun lobbied for a branch of the University of Alabama to be permanently located at the park. Dr. von Braun viewed the university as a major research asset that could support the work done at the park, Redstone Arsenal, and Marshall Space Flight Center. The University of Alabama in Huntsville campus was established at Cummings Research Park in 1969. At this time, the park included more than 1,000 acres.

In 1982, the City of Huntsville purchased 818 acres of land to add to the park and became more active in its development. The city partnered with the Chamber of Commerce of Huntsville/Madison County to direct the future development of Cummings Research Park. In 1983, the city established the research park management office at the chamber and created park development guidelines.

Organization

The City of Huntsville provides oversight for the sale and development of properties in Cummings Research Park, as well as the long-term maintenance of the common areas of the park including four lakes.

The Chamber of Commerce of Huntsville/Madison County is responsible for the marketing and daily management of the park. The research park director, employed within the chamber's economic development department, is responsible for providing site selection assistance, negotiating terms with prospective tenants, and reviewing site plans to ensure compliance with the covenants and restrictions attached to the land within the park.

The Cummings Research Park Board of Directors -- composed of local business, academic and community leaders -- is responsible for the overall governance of park. The board formulates plans and objectives for the park aimed to enhance its physical and technological growth. Assisting the efforts of the board of directors is the Cummings Research Park Advisory Board. This body comprises representatives from every company located in the park and reports to the board of directors the specific concerns of tenant companies. The Cummings Research Park Owners and Tenants Association was created to assist the city with the maintenance of common areas.

The Practice in Operation

The purpose of Cummings Research Park is to create a critical mass of high technology industries within a controlled and protected environment. To accomplish this, the following regulations, procedures, and marketing efforts are in place.

Permitted Development. The City of Huntsville officially zones Cummings Research Park as a Research Park District. The park includes three sub-districts: the Research Park Applications District, Commercial District, and Research Park West District.

The Research Park West District is designated for high technology industries. Tenants permitted to purchase land in the district include:

- research, experimental, and testing laboratories
- educational, scientific, and research organizations
- telecommunications businesses, excluding radio and television studios
- computer programming and other software services
- engineering, architectural, and design services
- production facilities and operations with a high degree of scientific input and activity where at least 30 percent of the building area (desired rate is 60 to 70 percent) is devoted to non-manufacturing activities (e.g., offices, laboratories, technical support).

High tech operations that are primarily manufacturing-oriented are not permitted in the park, but may locate in the adjacent 400-acre Thornton Research Park.

The other two districts are intended to house establishments that can provide support services to tenants locating in Research Park West. The Research Park Applications District is specifically designated for light industrial manufacturing, assembly, processing, warehousing, wholesale, and distribution operations "that support and complement" the entire Research Park District. Research Park Commercial District is designated to house retail and service centers for the park's tenants, employees, and visitors. The goal for this district is to provide services "uniquely suited to concentrations of high technology and research firms and educational institutions."

Regulations regarding development in Cummings Research Park are intended to create a park-like setting attractive to tenants. For example, landscaping requirements include tree planting every 20 feet, as well as planting islands or peninsulas in most off-street parking areas. There are specific protective covenants for Research Park West to allow for "harmonious development that will promote the general welfare of owners and occupants" in the park.

Development Approval Process. The research park director manages the development approval process. The director is responsible for informing the prospective owners about the zoning regulations, protective covenants, and design guidelines for the park. The director conducts initial and ongoing negotiations with prospective owners to determine all terms of agreement, as well as credit-worthiness.

Prospective owners are required to include the research park director in the process of building and site design. They also must submit a formal application and full set of architectural drawings (e.g., site plan, landscape plan, floor plans, signage detail, lighting plan, irrigation plan, etc) to the research park director. The research park director and City of Huntsville City Planning Department review the drawings for all proposed development to ensure full compliance with all design regulations and guidelines of the park and that the development is a permitted use. The Research Park Advisory Board, Research Park Board of Directors and City of Huntsville Architectural Design & Review Board also review the project for compatibility with existing tenants.

Prospective owners must deliver a presentation before the Research Park Design Review Committee regarding the scope, scale, and nature of the proposed development. The Design Review Committee, consisting of the research park director, administrative assistant to the mayor, city attorney and directors of the city's Inspection, Natural Resources, and City Planning departments, then reviews the application materials and approves or disapproves of development proposals for the park.

Land Purchase Approval. Because the city owns the remaining land available for development in the park, the Huntsville City Council must approve all purchasing deals. Prospective owners are required to purchase a minimum of five acres. Lot prices range from $45,000 to $69,500 per acre. If any of the existing owners in Cummings Research Park decide to sell their land, the city can exercise the right of preemption.

Marketing. The Chamber of Commerce of Huntsville/Madison County, the lead economic development agency, markets Cummings Research Park to new and expanding businesses. The chamber designates one staff person as research park director, but all members of the Economic Development Department market the park to prospects. In addition to marketing the available land for development, the chamber markets tenant space available in the existing multi-tenant facilities within the park. Any high tech business seeking to locate in Huntsville is immediately informed about the park and invited to a site visit. The chamber also develops marketing brochures and other communications material for the park.

Outcomes

BellSouth Invests More Than $150 Million. The growth and development of Cummings Research Park, as well as the presence of the U.S. Army Redstone Arsenal and Marshall Space Flight Center, have prompted BellSouth to create, over the past decade, one of the nation's most advanced telecommunications networks in Huntsville/Madison County. The telecommunications infrastructure includes more than 200,000 customer access lines, with 15,000 lines built with fiber-optic technology. According to BellSouth, the community has more than 20,000 sheath miles of fiber optic cable. Huntsville was the first major metropolitan area in the United States to have 100 percent digital switching and transmission facilities. Integrated services digital network and electronic switching service exchange services are available to all tenants at Cummings Research Park.

Alabama Supercomputer Authority Arrives. In 1987, the Alabama Supercomputer Authority, the first state-funded supercomputer network in the United States, opened a 20,000-square-foot center at Cummings Research Park. The authority provides high-performance computing services to business, government, and university organizations.

BizTech Created to Support Entrepreneurial Innovation. The success of Cummings Research Park propelled the chamber to create BizTech in 1997. This high-tech incubator has occupied a 40,000-square-foot building in the park since 1998. BizTech's mission is to support successful technology-based companies originating in, developing in, and relocating to Huntsville/Madison County. Numerous partners sustain BizTech, including the Alabama Department of Economic & Community Affairs, NASA Marshall Space Flight Center Technology Transfer Office, Tennessee Valley Authority, City of Huntsville, Calhoun Community College, NEAR Small Business Development Center, University of Alabama in Huntsville, Alabama A&M University, and Drake State Technical College. As of August 1999, BizTech housed five tenant companies.

In addition to space and building services, BizTech provides business assistance, mentoring, professional services, networking opportunities, training programs, access to capital, resource library and computer labs, technology transfer and technical assistance, intellectual property management services, marketing and promotions support, and university linkages. These services are available to both resident and non-resident clients.

City of Huntsville Expands Park. The success of Cummings Research Park and its contribution to the overall economy of Huntsville convinced the city to purchase another 447 acres in 1996 to add to the park. The park now spans 3,800 acres and includes more than 8 million square feet of building space. It is the second largest park in the United States, in terms of total acreage, according to 1997 data from the Association of University Related Research Parks, and the largest in terms of companies.

Major Expansion Activities in Recent Years. In 1994, Dynetics invested $3 million to build a 45,000-square-foot facility on 10 acres adjacent to its original site in Cummings Research Park. In 1997, Dynetics purchased another 10.3 acres, and now has 45 acres and 140,000 square feet of workspace. In 1995, Summa Technology purchased its previously leased 230,000-square-foot facility, a $10 million investment. During the past two years, Lockheed Martin Missiles & Space has invested nearly $5 million in additional facilities at its 81-acre site. In recent years, Nichols Research Corporation invested $5.1 million into expanding its facilities at Cummings Research Park.

Concentration of Intellectual Capital. The companies at Cummings Research Park specialize in telecommunications, electronics, computers, computer software and peripherals, aerospace avionics, and other high-tech areas and employ nearly 22,000 workers. According to a 1997 study by the Wharton Econometric Forecasting Associates Group, Huntsville ranks second in the nation for its concentration of technology employment, with a location quotient of 3.8 and high tech job growth index above the average metropolitan area.

Metropolitan Area	Location Quotient*	High Tech Job Growth**
San Jose, Calif.	6.34	97.19
Huntsville, Ala.	3.80	104.10
Lowell, Mass. (Boston)	3.76	95.29
Fitchburg, Mass. (Boston)	3.26	93.18
Austin, Tex.	2.53	126.53
Washington, D.C.	2.27	115.09
Middlesex, N.J. (New York)	2.25	94.25
Orange County, Calif. (Los Angeles)	2.15	80.70
Boston, Mass.	2.14	90.23
Raleigh-Durham, N.C.	2.03	97.59

*Location quotient is determined by dividing the percent of high tech employment in each area by the percent of high tech employment in the United States. A location quotient above 1.0 indicates that the industry is more concentrated in the metro area than in the average U.S. metro area.

**Metro Average = 100

Source: Wharton Econometric Forecasting Associates (WEFA) Group, August 1997

Park Commingles Fortune 500 and Small Business Firms. Of the 214 R&D operations located at Cummings Research Park, 67.3 percent (144) employ 50 or fewer workers. In addition, the park houses operations for Fortune 500 firms, including Avnet, BellSouth, Computer Sciences Corporation, Hewlett-Packard Company, IBM Corporation, Lockheed Martin, Boeing, Motorola Space & Systems Technology Group, Northrop Grumman Electronic Sensor Systems Sector, Raytheon Business Development Office, Teledyne Brown Engineering, and TRW, Inc.

As of August 1999, the park housed 44 companies that employ more than 100 workers. Reviewing the list of owners and tenants enables two important observations. One, the park's owners and tenants represent a wide range of high-tech industries. According to the research park director, companies in the park

represent more than 33 fields. Two, most of these companies (56.8 percent), have been founded since 1980. (See Appendix.)

Economic Impact Significant. In 1997, Niles Schoening of the University of Alabama at Huntsville's Department of Economics and Finance conducted an economic impact analysis of Cummings Research Park. The results are as follows.

Employment and Payroll Impacts of Cummings Research Park To Madison County and the State of Alabama

	Total Local Impact	Local Percent	Indirect State Impact	State Percent
Employment (jobs)	29,842	79%	7,928	21%
Payroll (millions)	$1,255	82%	$270	18%
Taxes (millions)	$28	24%	$89	76%

Source: Niles Schoening, University of Alabama at Huntsville, September 1997

At the time of this study, according to the Cummings Research Park director's office, the park had 17,000 workers. Today, it employs nearly 22,000, accounting for approximately 12 percent of Huntsville work force, based on total employment (182,583) reported by the U.S. Bureau of Economic Analysis.

Cummings Research Park has helped to attract high-paying jobs to the area. In 1980, the average annual wage in Huntsville was $16,325, according to the U.S. Bureau of Economic Analysis, 33 percent higher than the Alabama average ($12,317). The average wage ($31,765) reported in 1997 for Huntsville reflects a 94.6 percent increase since 1980, and was 25 percent higher than the Alabama average ($25,511).

Conclusion

In 1997, Cummings Research Park was named "Outstanding Research Park" of the world by the Association of University Related Research Parks. The park has also been recognized as one of the nation's leading research parks by several trade publications, including *Site Selection* magazine, *IndustryWeek*, and *Facility Management Journal*.

Research Park Director Alex Hardy identified two major challenges that the city and chamber have faced over the years -- financing the land purchase and maintaining the integrity of the park. As the park continues to grow and expand, these challenges are likely to remain. Cummings Research Park currently has an estimated 800 acres available for development.

In terms of future development, Hardy plans to encourage greater interaction among the companies in the park. The goal is to transform the Owner and Tenants Association into a point of contact for organizations throughout Huntsville to reach all 214 R&D operations and 22,000 employees. Plans also call for greater development in the Commercial District (e.g., hotel, day care, banking, executive services).

Acknowledgements

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Chronology

1943	U.S. Army established the Redstone Arsenal in Huntsville.
1948	U.S. Department of Defense transformed Redstone Arsenal into a facility for rocket research and development.
1950	U.S. Secretary of Army transferred Dr. Wernher von Braun and team of German scientists and engineers to Redstone Arsenal.
1960	NASA opened the Marshall Space Flight Center in Huntsville.
1962	Milton K. Cummings partnered with University of Alabama at Huntsville Foundation to create Cummings Research Park; purchased first 150 acres.
1963	Lockheed Martin Missiles & Space established its R&D operations at the park.
1969	University of Alabama established permanent campus at Huntsville.
1982	City of Huntsville purchased 818 acres to add to Cummings Research Park, became active in its development, and formed partnership with Chamber of Commerce of Huntsville/Madison County.
1983	City of Huntsville created park development guidelines to shape its future growth and development.
	Chamber of Commerce of Huntsville/Madison County assumed management control over Cummings Research Park.
1987	Alabama Supercomputer Authority opened its center at Cummings Research Park.
1996	City of Huntsville purchased another 447 acres to add to the park.

1997	Cummings Research Park was named "Outstanding Research Park" of the world by the Association of University Related Research Parks.
1998	BizTech, a high tech incubator sponsored by the Chamber of Commerce of Huntsville/Madison County, opened at Cummings Research Park.

Appendix

Owners and Tenants with More than 100 Employees (Ranked by Employee Size)

Company	Year Founded*	Employees	Industry Description
Teledyne Brown Engineering	1953	1,500	Systems-engineering-driven solutions to high-end environmental, energy and information problems; defense and space engineering services
Avex Electronics Inc.	1963	1,200	Electronic manufacturing and engineering to original equipment manufacturers in computer telecommunications networking and consumer products industries
ADTRAN	1986	1,200	Electronic transmission equipment for telecommunications industry
University of Alabama in Huntsville	1950	1,074	Adult education programs; research centers
U.S. Army Space and Missile Defense Command	1957	800	Research and development for ballistic missile defense
Computer Sciences Corporation	1965	800	Computer related services and support
SAIC (Science Applications International Corporation)	1971	520	Research and development services
Quality Research	1988	518	Export services in information technology, modeling and simulation; engineering and analysis services
Redstone Federal Credit Union	1951	490	Financial services
Dynetics, Inc.	1974	490	Weapons research and development
COLSA Corporation	1980	480	Information technology, systems engineering and technical products
SRS Technologies	1970	450	Engineering and scientific services, systems simulation and analysis, aeromechanics design/analysis, test and evaluation; prototype hardware development, software engineering
SUMMA Technology, Inc.	1987	450	Aerospace engineering and manufacturing of aircraft, missile, space precision parts, small rocket engines and command and control systems
Camber Corporation	1990	450	Products and services for entertainment, transportation, defense, environmental, space and energy markets
Raytheon Business Development Operation	1989	424	Design, analysis, development, fabrication and supply of missile systems
CAS, Inc.	1979	420	Weapons systems analysis
METAVEC Corp.	1985	400	Engineering, technical, management, information technology services
Site Service	1988	400	Janitorial services
Lockheed Martin Missiles & Space Lockheed Martin Astronautics Advanced Space Systems (two divisions of Lockheed Martin, with separate R&D operations)	1963	380	Research and development, analysis, systems engineering, software engineering, logistics and supportability engineering, weapons, systems development, aerospace engineering commercial launch vehicles
PEI Electronics, Inc.	1997	380	Defense electronics
BellSouth	1883	370	Telecommunications and information technology
TRW, Inc.	1972	330	Systems engineering, software development and information technology services
Calhoun Community College	1965	325	Adult education

Owners and Tenants with More than 100 Employees (cont'd)

Company	Year Founded*	Employees	Industry Description
Mission Research Corp.	1970	300	Radar and communication system design support, test and performance evaluation services
Madison Research Corp.	1986	300	Engineering and information technology services
ERC, Inc.	1987	300	Engineering services
Sparta, Inc.	1979	260	Engineering organization that provides support to defense and intelligence agencies
Sverdrup Technology, Inc.	1989	250	Science and engineering support services for NASA
Science & Technology, Inc.	1976	240	Systems engineering, engineering support, data management, environmental services, software development, facilities operation and maintenance
Coleman Research Corporation	1983	234	Guided weapon systems design, analysis, simulation
Nichols Research Corp.	1976	225	Information technology and technical services to government and community clients
Amtec Corporation	1988	225	Precision machining and prototyping, simulation and analysis, design and fabrication, test and evaluation
Cybex Computer Products Corporation	1981	220	Computer peripheral switch and extension products
Dynamic Security, Inc.	1985	220	Detective, guard and armored services
Lesco	1992	217	Government and commercial services
Tec-Masters Multimedia	1988	200	Engineering, information technology and multimedia services
Boeing North American Boeing Space & Communications Group/Rocketdyne Propulsion & Power (two divisions of Boeing, with separate R&D operations)	1962	163	Aerospace engineering
NASA Global Hydrology and Climate Control	1994	160	Weather-related research
Sigmatech, Inc.	1986	150	Engineering services for commercial and government applications
Vista Technologies, Inc.	1989	140	Nuclear technology engineering and technical services
Northrop Grumman-Huntsville Engineering Center	1989	130	Electronics for precision guided munitions
AEgis Research Corp.	1988	124	Systems engineering, modeling and simulation, software development, sensor development and evaluation, optics/electrical design and fabrication, system test and evaluation
Unigraphics Solutions, Inc.	1998	120	Mechanical computer-aided design software
Quantum Research International, Inc.	1987	110	Research, operational and analytical sciences

*Year Founded = Year the company was originally established. It is not the year the company located at Cummings Research Park. This data is not yet available.

Source: Cummings Research Park Director's Office, August 1999